

CRTronic 200 Installation Procedure

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Customer Service

CRTronic Family

PRELUDE

The CRTronic 200 is a direct entry system designed to meet the needs of a small typesetting environment. This consists of the CRTerminal, CRTronic and Typeview. These devices, or peripherals, when tied together, provide the user with an interactive machine to perform their everyday typesetting requirements.

Since the CRTronic 200 is composed of the above peripherals, the installation procedure has been set up to treat each unit separately. Therefore, this manual has the installation procedure divided into separate sections for each device used. This technique is used so that:

1. Each peripheral can be properly tested for its own functions.
2. Any modifications through Product Improvement Bulletins can be installed at this time.
3. Any new peripheral added to the system can be installed with its own installation procedure.
4. Time spent on installing each peripheral can be properly recorded for installation purposes.

Prior to doing the hardware installation, it is a good idea to have a pre-installation survey done so that you can insure a smooth installation. This way, you will be prepared for the proper room setup and reduce the time to install.

During the installation, it will be necessary to keep track of the time spent on each peripheral. If it takes more than two hours to install any device, notify your District office of the problem. If more than four hours passes, Customer Service should be notified of the particular problem so immediate action can be taken.

The installation procedure begins with a site inspection. This insures that preliminary requirements have been met as noted in the pre-installation survey. This is followed with the installation procedure for the CRTronic 200. From this point, we begin the installation procedures for the other devices in the system. The CRTerminal, Linotype Communications Interface, and the Typeview. To assist with each step in the procedures, a check off box is provided at the start of each instruction. This way you can insure that each operation is performed. Also, a replacement parts list is included should you be required to order parts which are defective during the installation.

CRTronic 200 Installation Procedure

**Customer Service
November 1983**

**CRTronic Family
PN 55-2040-02**

PRELUDE (Cont)

Upon completion of the CRTronic 200 installation, or any add-on you might be incorporating onto the customer's system, fill out the necessary information on the Acceptance form located at the beginning of this manual. Return this with your service reports to your District Office.

Please advise Customer Service of any problems encountered while using this manual.

TABLE OF CONTENTS

Section	Description	Page
Prelude	Introduction to the CRTronic 200	i
I.	Installation Procedure - Site Inspection	1-1
II.	Installation Procedure - CRTronic 200	2-1
III.	Installation Procedure - CRTerminal 200	3-1
IV.	Installation Procedure - Typeview	4-1
V.	Installation Procedure Linotype Communications Interface	5-1
VI.	Installation Procedure - Open	6-1
VII.	Installation Procedure - Open	7-1
VIII.	Installation Procedure Running with CRTronic 200 Software	8-1
IX.	Replacement Parts Lists	9-1

1. **Customer:** _____

2. **Address:** _____

3. **State** _____ **Zip:** _____ **Cust.No.:** _____

4. **Order No.:** _____

5. **MLCo. Factory Acceptance:** _____ **Date:** _____

6. **MLCo. Installation Acceptance:** _____ **Date:** _____

7. **Customer Authorized Signature:** _____

Title: _____ **Date:** _____

8. **Component List as Follows:**

[illegible]

SITE INSPECTION

The first step prior to doing any installation is to insure that the customer has made the proper room arrangements for his equipment. It is recommended that a pre-installation survey be performed so that the time required for the installation can be shortened by eliminating the miscellaneous details. This survey will entail many items from input power to expendables. Should an item be overlooked, installation time to install may become excessive. Check to see that the following points are covered prior to doing the installation.

1. ☐ Verify with the customer that he is in agreement as to the location of each piece of equipment to be installed in his typesetting room. If there are any discrepancies, have these ironed out before proceeding with the installation.
2. ☐ Check that the typesetting room is free of dust and dirt. Make sure that a clean environment will be maintained for his equipment. Dust and dirt can contaminate his floppy discs which will cause problems not easily identifiable.
3. ☐ Check that the interconnecting cables will not fall in a walkway between system peripherals. If they must, then make sure that there is some type of protection against damage. Many system arrangements utilize a computer room raised floor so that when changes are made, all that need be done is to move floor tiles around. Also air conditioning can be ducted under this floor.
4. ☐ Make sure that a power check was performed. We recommend that some measuring device which provides a chart type output is best to use as it indicates voltage transients not normally noted on a meter movement device. If there are excessive power variations indicated, then it will be necessary to have a voltage regulator / isolator installed. If you must proceed without a power line check, note here.
☐ No power line check performed.
5. ☐ Check that the proper A.C. outlets have been installed for the system peripherals. All devices use an NEMA socket number 5-15R. Normal configuration is a dual socket called a duplex socket. It is a good idea to have separate power lines installed as

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Once the site inspection has been completed, begin the installation with the CRTronic 200 , Section II.

CRTronic 200 TYPESETTER

As the CRTronic is the basis for CRTronic 200 equipment, it is the first device which we will install. Any devices we connect will use the CRTronic for output copy, hence, we install it first.

1. ☐ Examine the outer carton for shipping damage. If damaged, notify the District Office at once.
2. ☐ Open the CRTronic 200 carton, making sure it is upright. Remove the keyboard from the styrofoam packing and set it on the side. If the package still has tin foil wrapped around it, carefully lift the package out of the carton and set it on a sturdy table. Cut the tin foil at the bottom of the package. The CRTronic is mounted to a wooden board so this will be the best place to cut. Slip off the tin foil.
3. ☐ Remove the wooden base by loosening the four allen screws on the bottom of the CRTronic with the allen key supplied. Remove the six bags of silica-gel from the top and side of the film compartment and discard.
4. ☐ With a medium size phillips screwdriver, loosen the two screws at the top rear and the four screws at the base around the edge of the cover. Two are on the right side, one in the center rear, and one on the left side. Remove the top cover and observe that there is no internal damage or broken parts. Also, check that all visible connectors are in place.
5. ☐ Loosen the thumb screw on the side of the card cage and remove the rear cover. Check that each board is properly seated. At this point also check that the CPU-Z82 has the customer security prom fitted. If not, fit the security prom in position 41.
6. ☐ Connect keyboard cable, P/N 55-05986-00, to the 25D female connector on the rear of the CRTronic. Connect the ground lead to the ground lug next to the keyboard connector. At the other end of the keyboard cable, install the connector into the Keyboard and mount the ground strap to the grounding lug.
7. ☐ If an LCI is installed with this unit, proceed to Section V, page 5-1, and perform steps 1 thru 3. Return to this section to complete the CRTronic installation and then follow Section V, step 4 to check out the LCI.

CRTronic 200 TYPESETTER

8. ☐ Plug the A.C. power cord into the power connector at the rear of the CRTronic. Plug the line end into a duplex outlet CHECKED for 120 VAC operation. Turn power on and observe that the front green LED is flashing. If not, check fuses or input power for possible problem source. Press reset push button on front panel. Check the following items using a digital voltmeter for voltage checks and insure that they are in spec.
- ☐ a. Check that the green LED on the LVM-SCPU is on. If not, a memory problem exists on the LVM-512K RAM.
- ☐ b. On backplane, pin 131/331, check plus 5 volts.
- ☐ c. On backplane, pin 102/302, check plus 12 volts.
- ☐ d. On backplane, pin 114/314, check plus 15 volts.
- ☐ e. On backplane, pin 115/315, check minus 15 volts.
- ☐ f. On backplane, pin 101/301, check minus 5 volts.
- ☐ g. Remove film transport back cover and check 3KV at MP7 (3.0 volts approx.). Note: film transport checks are done at first power on.
- ☐ h. At processor, check 1.5KV at MP8 (1.5 volts approx.).
- ☐ i. At processor, check 7.5KV at MP9 (7.5 volts approx.).
9. ☐ Locate the 2 elapsed time meters mounted on the electronic chassis backplane. Observe the position of the mercury bulb and record the hours used on the component list under ETM Hours. For further information on the ETM, refer to page 2-4.
10. ☐ Place covers back on the chassis and typesetter processor. Also, place the top cover back on the CRTronic and reinstall screws.
11. ☐ Insert Test Disc, Part Number 55-3019-01, into drive 0 and press reset button. Observe red LED on drive 0 lights. Within a short time, the Test menu should appear on the screen. At the keyboard, depress "L" and then "1". Drive 0 should go active for about 30 seconds. At this time, you can now access the second half of the menu by depressing the  key. Details on using the test disc are included with the disc.
12. ☐ Perform memory tests for Processor 1 and 2. Configure front end for C=48, B=16, and M=16. Configure backend for Rows=4 and Repeat=02. Memory tests performed are the Address and Refresh memory tests. No errors shall occur.

CRTronic 200 TYPESETTER

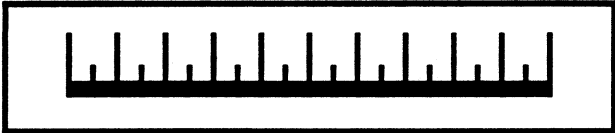
13. ☐ Perform Floppy Disc Tests with an initialized disc. Set up drive parameters for a 48 TPI, German format. Perform Tests 2 thru 9 on both drive 0 and 1. No errors are allowed.
14. ☐ Perform Video Tests 1 thru 4. No errors are allowed.
15. ☐ Do not perform any typesetting operations at this time unless you do not have any peripherals connected. All typesetting operations are done in the **RUNNING WITH CRTRONIC 200 SOFTWARE** section of this manual. Continue with the **CRTerminal 200**, Section III or the next section applicable to your installation. Troubleshooting typesetter problems will be done when running with system software, in Section VIII.

CRTronic Elapsed Time Meter

The elapsed time meter used on the CRTronic family consists of a moving mercury bulb inside a glass channel which is inside of a glass tube similar to that of a fuse. When AC power is supplied to the machine, the DC voltage available from the power supply is applied thru a dropping resistor which causes the mercury bulb to move along the length of the tube. The tube is marked with 10 major and 10 minor divisions from the start position. As the bulb moves the length of the tube, the time indicated is a close approximation of the time the machine is on. For example, if the bulb is at the first major division on the 1000 hour tube, the time that the machine was on is 100 hours. Once the bulb has travelled the length of the tube, it cannot be used to continue reading the time used.

There are two tubes used. One is graduated for 1000 hours and the other is for 5000 hours. Use the following chart for a breakdown of the tube divisions and to identify which unit is for 1000 or 5000 hours.

CRTronic Family Elapsed Time Meter

Tube Layout			Meter Legend		
Bottom		Top	CRTr 300	CRTe 300	Typeview 300
					
0	500	1000	BZ1	BZ1	BZ2
0	1000	2000	BZ2	BZ2	BZ1
	3000	4000			
	5000				

CRTerminal 200

As we add devices to the CRTronic 200, we begin to observe what happens when machines must talk to each other. This interaction requires us to share features that would otherwise be done independently. Parts must function in harmony for a good environment to exist. It is with this in mind that we begin the hardware installation by checking each device separately and then connecting them together and check with the interconnections in place. Begin the check out of the CRRterminal 200 with the following procedure.

1. ☐ Examine the outer carton for shipping damage. If damaged, notify the District Office at once.
2. ☐ Open the CRRterminal 200 carton, making sure it is upright. Remove the keyboard from the styrofoam packing and set it on the side. Lift the CRRterminal out of the carton and set it in its final location in the typesetting room. The CRRterminal is mounted to a wooden board.
3. ☐ Remove the wooden base by loosening the four allen screws on the bottom of the CRRterminal with the allen key supplied. Discard the wooden base.
4. ☐ With a medium size phillips screwdriver, loosen the four screws at the sides of the top cover. Two are at the top front each side and two are at the front center each side. Remove the top cover by pushing back so as to free it from the front of the machine. It will slide back on rails for a few inches and then can be lifted off. Observe that there are no broken or damaged components. Check that all visible connectors are in place.
5. ☐ Check that each board is properly seated. At this point also check that the CPU-Z82 has the customer security prom fitted. If not, fit the security prom in position 41.
6. ☐ Connect keyboard cable, P/N 55-05986-00, to the 25D female connector on the rear of the CRRterminal. Connect the ground lead to the ground lug next to the keyboard connector. At the other end of the keyboard cable, install the connector into the Keyboard and mount the ground strap to the grounding lug.
7. ☐ If an LCI is installed with this unit, proceed to Section V, page 5-1 and perform steps 1 thru 3. Return to this section to complete the CRRterminal installation and then follow Section V, step 4 to check out the LCI

CRTerminal 200 (Cont)

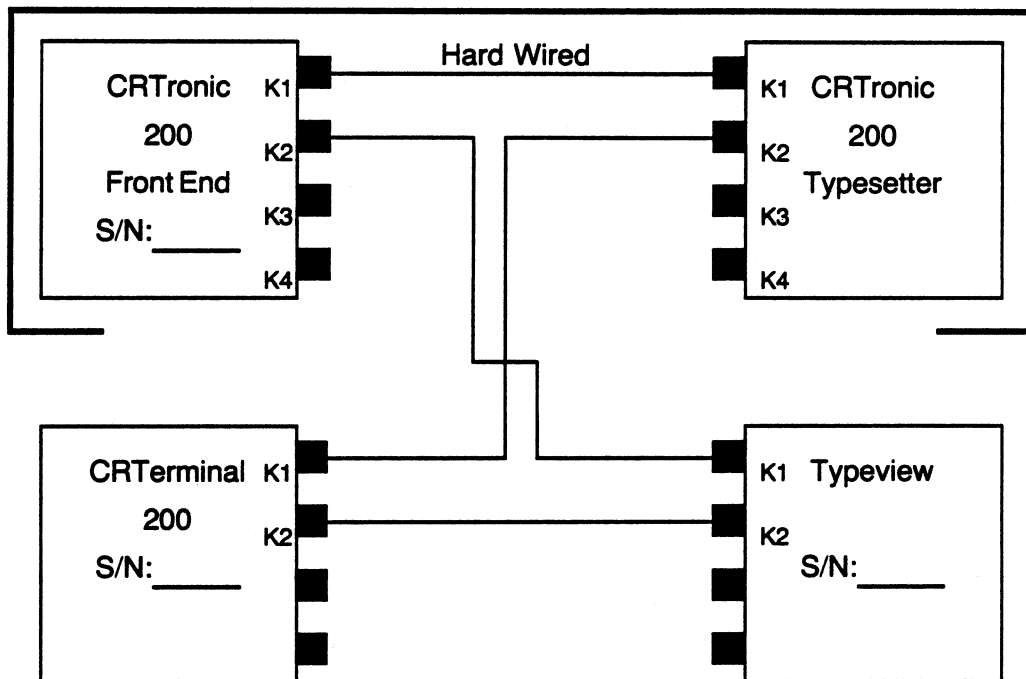
8. ☐ Plug the A.C. power cord into the power connector at the rear of the CRTronic. Plug the line end into a duplex outlet CHECKED for 120 VAC operation. Turn power on and observe that the green LED is flashing. If not, check fuses or input power for possible problem source. Using a digital voltmeter, check that the following voltages are in spec.
- ☐ a. On backplane, pin 131/331, check plus 5 volts.
- ☐ b. On backplane, pin 102/302, check plus 12 volts.
- ☐ c. On backplane, pin 101/301, check minus 5 volts.
9. ☐ Locate the 2 elapsed line meters mounted on the electronic chassis backplane. Observe the position of the mercury bulb and record the hours used on the Component List under ETM hours. For further information on the ETM, refer to Section II, page 2-4.
10. ☐ Place the top cover back on the CRTerminal and reinstall screws.
11. ☐ Insert Test Disc, Part Number 55-3019-01, into drive 0 and press reset button. Observe red LED on drive 0 lights. Within a short time, the Test menu should appear on the screen.
12. ☐ Perform memory tests for Processor 1 Configure front end for C=48, B=16, and M=16. Tests performed are Address and Refresh memory tests. No errors shall occur.
13. ☐ Perform Floppy Disc Tests with an initialized disc. Set up drive parameters for a 48 TPI German format, disc drive. Perform Tests 2 thru 9 on both drive 0 and 1. No errors are allowed.
14. ☐ Perform Video Tests 1 thru 4. No errors are allowed.
15. ☐ Connect the CRTronic 200 to the CRTerminal with the two cables supplied. One cable is short with a 9 pin connector at one end and 25 pin at the other. Part number is 55-16640-00. The longer cable is attached to the shorter cable. This part number is 55-16636-00 (9 feet). Connect the 9 pin end to the CRTronic and the 25 pin end of the longer cable to the CRTerminal. Cable number 55-16637-00 may also be used. This cable is 27 feet long. Connect the 9 pin end to Back End connector BEK2 on the CRTronic. Connect the 25 pin end to the Front End connector V24-K1 on the CRTerminal.

CRTerminal 200 (Cont)

16. ☐ Power on the CRTronic and press reset. On the CRRterminal, enter "L" and then "1" on the keyboard. Make sure the test disc is in drive 0. Set up Processor 2 Memory Test for Row=4 and Repeat=02. Perform processor 2 test. No errors allowed.
17. ☐ If other devices are being connected to the CRRterminal, you might want to set up the front end connector for the following back end devices. Follow this configuration for devices connected.
- ☐ a. CRRterminal, Front End V24-K1 - to CRTronic Back End BEK2.
- ☐ b. CRRterminal, Front End V24-K2 - to Typeview Back End V24-K1.
- Use the chart on the following page for showing how the peripherals are connected. Check your cabling arrangement by observing the port connections on each unit used.
18. ☐ Do not perform any typesetting operations at this time. All typesetting operations are done in the software checkout section of this manual. Continue with the next section applicable to your installation.

CRTronic 200 Cabling
Front End

Back End



Possible Cable Configuration
Full CRTronic 200

Typeview

The Typeview is a backend device that provides what we call a soft copy of what you see in the normal typeset output. The text can be displayed in either actual size or can be exploded or reduced for the desired output on the Typeview screen. Once the "soft copy" meets your requirements, you can then send the job to the typesetter. At this time, we begin to check out the Typeview.

1. ☐ Examine the outer carton for shipping damage. If damaged, notify the District Office at once.
2. ☐ Open the Typeview carton, making sure it is upright. Lift the unit out of the carton and set it on a table next to the CRTronic and/or CRTerminal in the typesetting room.
3. ☐ Remove the plastic cover from the Typeview and discard.
4. ☐ Remove the four screws at the rear of the Typeview that hold the back cover on. Remove the 4 screws that hold the top cover to the back panel. Remove the two screws from under the front bezel. Lift out the bottom of the bezel and push up to lift off. Lift off the top cover. Observe that there are no broken or damage components inside the unit. Also, check that all visible connectors are in place.
5. ☐ Remove the plastic cover off of the electronic chassis by loosening the two screws that hold it in place. Check that each board is properly seated.
6. ☐ Plug the A.C. power cord into the power connector at the rear of the Typeview. Plug the line end into a duplex outlet checked for 120 VAC operation. Turn power on and observe that the green LED is flashing. If not, check fuses or input power for possible problem source. Press the reset push button.
7. ☐ Observe that the green LED on the LVM-SCPU board in on 20 seconds after pressing reset. If not, you have memory problem. Repair before any further testing.
8. ☐ Check that the following voltages are in spec. on the electronic chassis:
 - a. ☐ + 5 volts
 - b. ☐ + 12 volts
 - c. ☐ + 24 volts

Typeview (Cont)

9. ☐ Locate the 2 elapsed time meters mounted on the electronic chassis backplane. Observe the position of the mercury bulb and record the hours used on the Component List under ETM hours. For further information on the ETM, refer to Section II, page 2-4.
10. ☐ Place the top cover back on the Typeview and install screws. Install front bezel and back cover using hardware removed in step 4.
11. ☐ Connect the CRTronic 200 to the Typeview with the two cables supplied. One cable is short with a 9 pin connector at one end and 25 pin at the other. Part number is 55-16640-00. The longer cable is attached to the shorter cable. This part number is 55-16636-00 (9 feet). Connect the 9 pin end to the CRTronic front end FEK2, and the 25 pin end of the longer cable to the RS 232 V24-K1. For another front end device, use the 55-16636-00 cable to connect from the front end port K2 to the next unused V24 port on the Typeview. A longer cable is also available to replace the 9 foot cable. It's part number is 55-16637-00 (27 feet). It may be used in place of the 9 foot cable.
12. ☐ Power on front end device and insert Test Disc into drive 0 and press reset button. Observe red LED on drive 0 lights. Within a short time, the Test menu should appear on the screen.
13. ☐ Power on the Typeview and press reset. On the front end device, enter "L" and then "2" on the keyboard. Set up Processor 2 Memory Test for Row-4 and Repeat-02. Perform Processor 2 tests. No errors are allowed.
14. ☐ Do not perform any soft typesetting operations at this time. All system operations are done in the software checkout section of this manual. Continue with the next section applicable to your installation.

Linotype Communications Interface (LCI)

The Linotype Communications Interface (abbreviated LCI) provides a means to input data to the CRTronic from a word processor or any other peripheral that adheres to an RS232-C interface. The connection is made either with a direct cable or thru telephone lines via a modem. If more than one LCI is used, repeat this procedure for each unit.

1. ☐ Examine the outer carton for shipping damage. If damaged, notify the District Office at once.
2. ☐ Open the LCI carton and check that all necessary hardware is included. Remove the LCI PCB. 55-16149-02, from the wrapping material.
3. ☐ Open the CRTronic or CRTerminal as per Section II or III. Plug the LCI into position one on a CRTronic or position six on a CRTerminal. If a CRTerminal is being used, connect the I/O cable to the lower backplane connector at position 6. Insert the other end into an unused rear panel opening and fasten with the 4 screws from the panel removed.
4. ☐ Insert the loopback connector, part number T18-1853-01, onto the 25 male pin RS232 connector. Power on the CRTronic/CRTerminal and press reset. Load drive 0 with the system software. Insert a job disc in drive 1. When background is ready, enter "info"A.FX.1.Test" on the command line and execute. X is the baud rate you select. This is the loopback test used prior to connecting to your word processor. No errors are allowed with this test.
5. ☐ Remove the Loopback connector and set up the LCI to operate as either a direct connect or modem connect as outlined in step 6 or 7 below.
6. ☐ If you are using direct connect to a word processor, install the Null Modem Cable, part number 55-16508-01, to the 25 pin male RS232 connector. Connect the other end of this cable to the word processor to be used. Use the additional one to one adapter cables as necessary to tie to the word processor for any cable conversions.
7. ☐ If you are using a modem, install the serial cable, part number 18-1810-02, to the 25 pin male RS232 connector. It may be necessary to insert the adapter cable, part number 55-2042-01, to connect to the CRTronic/CRTerminal. Connect the other end to the modem being used for data

Linotype Communications Interface (LCI) (Cont)

communications. Perform a dial up test with the North Bay Shore Test Set, 516-231-5713. Set up your background command for "info"A.05.1.Testset" and shift start. This test shall run with no errors.

8.



Do not perform any typesetting operations at this time. All typesetting operations are done in the software checkout section of this manual. Repeat the above procedure for each LCI on the system. Once you have completed the hardware installation, proceed to Section VIII, and begin software checkout.

**This section
left open
for future use.**

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left open
for future use.**

INTRODUCTION

The intent of this section is not to make you proficient in applications, but to give you the knowledge necessary to determine if:

- (1) a problem is either software or hardware related,
- (2) to have the ability to discuss the problem intelligently and assist a customer that does indeed have a software problem, and
- (3) to properly execute the Installation Test Procedure and to access any minor problem that might develop.

DESCRIPTION:

The CRTronic 200 series can consist of:-

1. CRTronic 200.
2. CRTronic 200, CRTerminal and a Typeview.
3. CRTronic 200, and a Typeview.
4. CRTronic 200, CRTerminal.

Even though a 200 series can look physically different from installation to installation, the Installation Test Procedure software has been configured in such a way as to render all physical configurations alike. Care need only be taken to adhere to the cable connections, as noted in Section III, to assure similarity.

Cables should be connected in such a manner as to create an environment whereby output port one is always utilized as a typesetter. As an example, if configuration two were installed, the CRTerminal would be cable connected from output port K1 to the CRTronic backend K2. The Typeview, on the other hand, must use output port K2 since port one is automatically the port used to the CRTronic 200's own backend.

CRTronic 200 Software

The CRTronic 200 software consists of:

1. System Front End I
2. System Front End II
3. Backend I
4. Backend II
5. System Files disk
6. Utility I
7. Utility II
8. Font Disk's
9. ATP disks
10. Typeview program

All program disks will have been generated on 48 t.p.i. drives therefore they need only be copied with the DUMP command.

It should be noted, at this time, that if a double sided 48 t.p.i disk is used, both Front End programs can be stored on one disk, both Backends on another and the Utilities on a third. This can be accomplished by using the **CONCAT** command which will be discussed in conjunction with the Utility program.

Front End Programs I/II

At no time are machine dressings stored on Front End I. All machine dressings must be stored on Front End II. It should be noted that disks generated with a **CONCAT** can have machine dressing changes. The software will automatically write the changes to Front End II.

CRTronic 200 Front End Software (Cont)***Foreground/Background Screen Messages***

Messages displayed above the control line at the right side of the screen are:

- M-** System Message (Usually an error message)
- O-** Single sided, 48 t.p.i.
- 1-** Double sided, 48 t.p.i.
- T-** Typeview on but not in use
 - Typeview on and in use
(Either $\frac{2}{3}$ or Reverse Video T will be displayed)
- D-** Display Mode
- I-** Insert Mode
- R-** Supershift

Two digits will appear when disk drive movement occurs. These digits tell the operator what kind of disk is being used. The left digit denotes drive 1 and the right drive 0.

System Foreground Commands

The following list of foreground commands are used when trying to obtain status information on typesetting parameters. The CRTronic 200 has a foreground command feature called Display Mode. If there is text on the screen, and you execute any of the foreground commands, the information you requested, upon execution, will display on the screen. When you are ready to go back to your text, depressing the home key will again display your text. No text resident on the screen will have been lost upon execution of these commands.

Since many of the following list of commands are familiar to you, only commands that are new to the 200 Series will be defined as to purpose.

GFDI,port #	Get Font Directory
GFN	Get Font Assignment Table
GHD,drive	Get Hyphenation Dictionary Hyphenation which is resident on the Utility disk is calculated on the screen.
GPF,port #	Get Privileged Fonts Privileged fonts stored for a specific port can be called to the screen.
GUF	Get User Formats
GMC	Get Macro Characters

CRTronic 200 Front End Software (Cont)

GBM	Get Background Messages. Background messages are displayed on the screen and the background message line is cleared.
GMT	Get Text Messages. All messages are displayed on the screen.
GFDR	Get Font Dress.
GFT,drive	Get Font Table. Physical font numbers and names will be displayed on the screen.
GOP	Get Output Port Parameters. All defined parameters for the output ports are displayed on the screen. They are in order of display; Port Number, Terminal Number, Device Type, Operator I.D., Priority, Page Reduction, Typesetting Mode, Error Handling Reverse Video, Measurement Film Advance Left Margin Typeview, Max. Line Measure, Monitor ID, Memory Size.
GQD,port #	Get Queue Directory for that port. The Queue Directory is displayed on the screen.
SCG	Select Character Generator. One of two character generators are displayed on the screen.
ATT,port,0 or 1	Define Typesetter Mode. 0 (zero) - typesetter stops after each job. 1 - typesetter will stop only for error.
JOBHLT,port,0 or 1	Define Operator Mode. Job can be stopped or continued from the screen. (1- stop at end job, 0 - continue)
OPKEY,port, keyword	Define Operator Keyword. Keyword for specific port can be changed from keyboard.
RED,port, page reduction	Define Page Reduction Factor Redefine page reduction factor from screen.

CRTronic 200 Front End Software (Cont)***Foreground Screen Messages* MASTER TERMINAL ONLY**

The terminal that loads the Backend programs for the typesetter's and Typeview is considered the Master Terminal. The Master also houses the Font disk in drive 0.

There are certain commands that only the Master can perform. They are:

CANCEL,port,TN	A specific job can be cancelled from the queue.
CLQD,port	All jobs in a specified queue and with a status of cancelled or executed can be removed from the queue.
CLQUE,port	All jobs waiting in a specified queue are cancelled.
DFODR,port,drive	Put new fonts in RAM.
CONT,port	Continue after PTU halt. (After output cassette full message)
HALT,port	Stops backend device on that port.

CRTronic 200 Backend Software

Backend I/II is the backend software which must be loaded in order to set type on the CRTronic 200. It will be loaded by the Master terminal.

Background Commands

BOOT	Boot the Front End Program.
DUMP	Any disk can be DUMPed including CFD,s
LOAD,S,port,drive	Load backend software.
CCP,tn	Copy output port parameters to Front End II
	Other commands same as CRTronic 200.

CRTronic 200 Utility Programs I/II

The CRTronic 200 is programmed with the Utility programs whenever machine dressing is required. Any machine dressing that is copied to the Utility programs must be copied to Utility II.

Commands that are new to the 200 series Utility program are:

SEH"xxxxxx"	Select Hyphenation Logic (1)
SEH2"xxxxxx"	Select Hyphenation Logic (2)
CEX,xxxx	Copy Exception Word Dictionary (1)
CEX1,xxxx	Copy Exception Word Dictionary (2)
COHY"xxxx"	Copy Hyphenation Logic
INIT,H	Initilize disk to copy hyphenation
INIT,S	Initilize disk in order to CONCAT
INIT,D	Initilize job disk
INIT,F	Initilize font disk
CONCAT	You can only copy from single to double sided disk. If using a double sided 48 t.p.i. disk, either Front End I and II or Backend I and II can be CONCAT to one disk. If double sided 96 t.p.i. disk, one Front End and several Backends can be stored on one disk.
CATP,font #,drive,tn	Copy ATP Table
COFOATP,font #,Log. #	Copy font with ATP

Typeview

The Typeview program should be loaded from the Master terminal. The reset button on the Typeview must be depressed and you must wait 1/2 minute before loading program.

Font Disks

The CRTronic series all use the same master font disks therefore font handling is exactly the same with the exception of ATP.

A Font Assignment Table (FAT) will be generated and stored on Front End II in exactly the same manner as previous CRTronics.

FAT table

A FAT table consists of logical font numbers and master font numbers. When a font is called for in the text stream, font 7 for example, the FAT table is looked at. When font 7 is found, the master font number is looked at (35). The program then looks in RAM to see if master font 35 is resident there, if not it then looks in drive 0 for the font. No font can be used to set type unless it is resident in the FAT table.

To Generate a FAT table

logical# master font number/

1 35/2 42/3 511/4 72/5 110/6 621/7 103(quad left)
8 22/9 97/10 104/11 67(quad left)

Up to 499 logical and master font numbers can be resident in one FAT table. A space bar is used to separate the logical number from the master number and a slash between each set except the last entry in a line. The slash is then replaced with a quad left. When complete, the FAT table is stored on the System Files disk as a job would be stored and then copied to Front End II.

Copy FAT table to Front End II

1. Put Front End II in drive 0
2. Put disk with FAT table in drive 1
3. In background type:

CFN,tn (of FAT table)
Shift/Start

When ready the FAT table will have been stored on Front End II. To check FAT table after Front I/II has been loaded type **GFN** in the foreground, Shift/Start and the FAT table stored will display on the screen.

Font Copying

Fonts without names must be copied with **COFON**. To find out if a font has a name:-

1. Put Master font disk in drive 0.
2. In foreground type
GFDI,0
Shift/Start

If only master and logical font numbers appear on the screen COFON must be used. If font names plus logical and master font number appears COFO can be used.

When using the COFON command the appropriate Identifier must be used. **X** should be used for standard fonts, **D** for Pi fonts and **S** for special fonts.

Copying Fonts with COFON

1. Program machine with Utility program.
2. Put new disk in drive 0.
3. In background type
INIT,F
Shift/Start

When Ready

4. Put Master Font Disk in drive 1.
5. In Background type

COFON,MDF#,CFD# "Xname of font"
Shift/Start

Remember if special font use **S** or Pi font use **D** in place of the **X**

Copying fonts with COFO

1. Program machine with Utility program.
2. Put new disk in drive 0.
3. In background type
INIT,F
Shift/Start

Font Copying (Cont)

When Ready

4. Put master font disk in drive 1.
5. In background type

COFO,MFD#,CFD#
Shift/Start

Copy ATP to Fonts

1. Put CFD in drive 0.
2. Put ATP disk in drive 1.
3. In background type

CATP,logical font #of font on CFD,drive,TN of ATP table

CATP,1,1,4
Shift/Start

ATP disks are secured, in that it is font security conscious. Therefore ATP tables cannot be copied to another disk such as System Files disk. If ATP is used on any other disk or with another font security other than that on that ATP disk, the error "NO USER RIGHTS" will be displayed. Also, when ATP is stored with a font, a T will display in the font directory to alert the operator as to which fonts have ATP. It also should be noted, that up to 16 fonts can be stored on a 48 t.p.i. Slanting is font dependent and **NO** slanting can occur on sizes 48 to 128 pt.

Using ATP

After the CRTronic has been programmed with the Front and Backend programs, and ATP has been stored with the fonts, the following commands are used for kerning and tracking.

- ›CK‹ - Turn on kerning
- ›TRx‹ - Use tracking
 - ›TR1‹ is track 1 (tight)
 - ›TR2‹ is track 2 (tighter)
 - ›TR3‹ is track 3 (tightest)
- ›XCK‹ - Cancel kerning

In text stream one would code ›f1‹ ›Ck‹ ›TR2‹ if track 2 were being used. Error 16 will be displayed if you justify using ATP with a font which does not have ATP stored with it and during SET, Abort error 249.

Job Disk

Job disks must be initialized with INIT,D. Single sided 48 t.p.i disks can store up to 314 jobs; double sided 48 t.p.i, 638 jobs. Type can be set from 1 to 128 point.

System Files Disk

The System files disk contains all the files necessary to customize the CRTronic program for the customers unique use. Such things as Macro characters and formats can be stored on Front End II using the System files disk.

Copy Formats to Font End II

1. Program CRTronic with Utility Program.
2. Put Front End II in drive 0.
3. Put System files disk in drive 1.
4. Call format file to the screen from System files disk.
Add the formats you want stored.
5. Save as a normal file on the System files disk.
6. In background type
CUF,tn (of format file)
Shift/Start

When ready, new format file has been stored on Front End II. After machine programmed with Front and Backend programs, formats can be checked by typing **GUF** in foreground. Formats stored on Front End II will display on the screen.

Copy Macro Characters to Front End II.

1. Program CRTronic with Utility program.
2. Put Front End II in drive 0.
3. Put System files disk in drive 1.
4. Call appropriate Keyboard Assignment table to the screen.
(Unshift, Shift or Supershift)
5. Find the key number that you wish to store under using the table in the Operators manual.
6. Find the internal code you wish to use as a screen display for the macro string you will store. Internal codes can be found in the Operators manual.

Copy Macro Characters to Front End II. (Cont)

7. Type Key #,internal code#(quad left)
8. Save the file on the Systems files disk.
9. If keyboard layout is unshift store with **CUK**.
If keyboard layout is shift store with **CSK**
If keyboard layout is supershift store with **CTK**

CTK,TN (of Keyboard Layout file)
Shift/Start

When Ready

10. Program the CRTronic with Front End I/II.
11. Call the appropriate Macro character file to the screen.
12. Scroll to the bottom of the file.
13. Type macro character string you wish to store.

ø"»F1«Mergenthaler(quad left)

14. Save file on the System files disk.
15. Program CRTronic with Utility Program.
16. Put Front End II in drive 0.
17. Put System files disk in drive 1.
18. In background type:

CMC,TN (of Macro file)
Shift/Start

After CRTronic programed with Front and Backend programs check to assure Macro characters are stored by typing **GMC** in the foreground, Shift/Start. The Macro character file will display on the screen.

Installation Procedure 200 Series

CRTronic 200 Functional Description

Two 48 tpi drives
16 fonts on disk
Front End K1 internal connection (output) to Backend K1
Front End K2 Typeview (Optional) (output)
Front End K3 Not Used (Front & Backend)
Front End K4 Not Used (Front & Backend)
Backend K2 CRTerminal (Optional) (input)

Disks Needed:

UTILITY I/II

FRONT END I/II must be used to store all machine dressing. At no time are machine dressings stored on Front End I. If installation consists of CRT200 and CRTerminal, each will require a Front End I/II program.

BACKEND I/II program contains backend software for the CRTronic.

FONT DISK must be generated using customers fonts.

JOB DISK contains all dressing information such as CCP, etc., and jobs needed for installation procedure.

NOTE: Any error between 128 and 239 requires reprogramming.
DO NOT REMOVE DISKS WHEN BACKEND "READY" APPEARS. Remove disk only after disk drive lights out. "READY" does not indicate completion of load.
CRTronic 200 shall IN ALL CASES be the Master Terminal (Terminal 1).

Installation Procedure 200 Series (Cont)**A. PROGRAM CRTronic 200 WITH UTILITY PROGRAM**

1. Turn machine on.
2. Put Utility disk I in drive 0.
Put Utility II in drive 1.
(If using one disk with both Utility I/II, on the disk, put in drive 0.)
3. Press reset button.
4. When drive light goes out remove both Utility disks.
5. Put Front End II for CRTronic 200 in drive 0.

B. COPY CHANNEL PARAMETERS TO FRONT END II

File 2 (CCP/200) on the Job Disk is used to configure the CRTronic 200. Store that file on the CRTronic 200 Front End II.

The configuration for file 1 is:

Output port K1- CRTronic 200

Output port K2 - Typeview

File 6 is for the CRTerminal. The CRTerminal must have it's own Front End II program, therefore, the CRTerminal, would be Terminal 2 and file 6 would be used.

The configuration for file 6 is:

Output port K1 to CRTronic 200

Output port K2 to Typeview

Remember file 6 is used for Terminal 2 (CRTerminal), file 2 for Terminal 1 (CRTronic).

Installation Procedure 200 Series (Cont)

6. Copy file 2 (CCP/200) to Front End II.

Type in Background

CCP,2

Shift/Start

7. Put Front End II, for each CRTerminal in drive 0 and copy appropriate CCP file following step 6.

C. CREATE CFD FROM CUSTOMER'S MFD

A font disk must be generated to run the Installation Test Procedure. The test procedure jobs have been generated using 4 fonts (F1, F2, F3 and F4) therefore at least 4 fonts must be resident on the CFD. It is recommended that the 4 fonts copied be standard fonts suitable for generating text since no Pi font is used in the test procedure. Follow the procedure outlined on pages 8-8 and 8-9 (Font Copying) in this manual.

D. GENERATE A FONT ASSIGNMENT TABLE

A font assignment table must be generated using logical font numbers and master font numbers to correspond with CFD generated in step C. Remember no Pi font in the test procedure and at least 4 fonts on the CFD.

E. COPY FONT ASSIGNMENT TABLE ON FRONT END II FOR CRTronic 200

8. In Background type

CFN,TN (of FAT table)

Shift/Start

F. PROGRAM MACHINES WITH FRONT AND BACKEND PROGRAMS .

9. CRTronic 200 - MASTER TERMINAL

- (1) Put Front End I in drive 0.
- (2) Put Front End II in drive 1.
- (3) In Background type

BOOT

Shift/Start

When both disk drive lights are out

- (4) Remove Front End I and II.
- (5) Put Backend program in drive 0.
- (6) In Background type

LOAD,S,1,0 (single user, port 1, drive 0)

Shift/Start

(If program is on 2 disks, put I in drive 0, II in drive 1 and follow step 6 above.)

Installation Procedure 200 Series (Cont)**G. LOAD TEMPORARY WIDTHS IN CRTronic 200**

10. Put font disk in drive 0.
11. In background type.

LOFO,S,0,1,2,3,4
Shift/Start When Ready

H. LOAD FONTS IN RAM

12. In Background type

LOFOK,1,0,1,2,3,4 (port 1, drive 0, log #)
Shift/Start

This procedure takes time - allow to finish

13. Leave font disk in drive 0.

I. Load Typeview program

14. Put Typeview program in drive 1.
Remember to reset Typeview and wait ½ minute
15. In Background type

LOAD,S,2,1 (single user, port 2, drive 1)
Shift/Start - When Ready

J. Load Font Widths for Typeview

16. In Background type

LOFOK,2,0,1,2,3,4 (port 2, drive 0, log #)
Shift/Start

When ready, jobs can either be sent to typesetter or Typeview.

Installation Procedure 200 Series (Cont)**K. SET TEXT JOBS**

17. Put job disk in drive 1.
18. In background type SETK,port,drive,TN

If during typesetting you preceive a problem

- (1) cursor in foreground
- (2) Type

GQD,1
Shift/Start

Queue directory will appear for port 1. Queue directory will indicate execute, done, waiting or abort with error number. This will give you indication of how typesetting is progressing or if you have a problem. The Queue Directory can be called for any port you are working with. Remember any error between 128 and 239 in queue directory requires reprogramming.

- (a) Set TEST A/200

SETK,1,1,24
Shift/Start When Ready

- (b) Set TEST B/200

SETK,1,1,25
Shift/Start When Ready

- (c) Set TEST C/200

SETK,1,1,26
Shift/Start When Ready

Installation Procedure 200 Series (Cont)

(d) Set TEST D/200

SETK,1,1,27
Shift/Start

When Ready

(e) Set TEST E/200

SETK,1,1,28
Shift/Start

When Ready

(f) Set TEST F/200

SETK,1,1,29
Shift/Start

When Ready

(g) Set TEST G/200

SETK,1,1,30
Shift/Start

When Ready

(h) Set TEST H/200

SETK,1,1,31
Shift/Start

When Ready

(i) Set TEST I/200

SETK,1,1,32
Shift/Start

When Ready

19. Press film advance button twice.

20. Process copy.

NOTE: If cassette full occurs during typesetting, when current job has finished setting, press film advance button twice, cut paper and process output. After reseating output cassette, in foreground type **CONT,1 Shift/Start**. Setting will then resume.

1 designates the port used, therefore 2 would be used for output port 2, 3 for output port 3 etc. It should be remembered, that having followed the procedure outlined in this book, that output port 1 will always be used to set type.

Installation Procedure 200 Series (Cont)**Program the CRTerminal**

The CRTerminal needs only Front I/II since the Master Terminal (CRTronic 200) has programmed the Backends and houses the fonts.

1. Program the CRTerminal with Utility Program.
1. When Ready remove Utility disks.
2. Put new disk in drive 0.
3. Put Front End II in drive 1.
4. In Background type:

DUMP

Shift/Start - When Ready

5. Remove Front II from drive 1.
6. Put job disk in drive 1.
7. Copy Output Port Parameters

CCP,6

Shift/Start When Ready

8. Remove job disk and Front II.
(Mark Front II for T2)
9. Put Font disk in drive 1.
10. Put new disk in drive 0.
11. In Background type:

INIT,F

Shift/Start When Ready

12. In Background Type:

DUMP

Shift/Start When Ready

you now have font disk and Front II for Terminal 2.

After CRTerminal has been programmed only font widths need be stored for justification purposes. In Background type:

LOFO,S,0,1,2,3,4

Shift/Start

When Ready to send jobs to the typesetter, use SET command.

Installation Procedure 200 Series (Cont)**Sending Jobs to Typeview**

After the completion of Steps I and J (page 8-15), you are ready to send jobs to the Typeview.

Load Fonts to Typeview

1. In Foreground type.

SON,2,0

Shift/Start fonts will load into Typeview

2. In Background type.

SETK,2,1,24

Shift/Start When Ready job 24 will be resident in Queue

3. In Foreground type:

GQD,2

Shift/Start

The Queue Directory for port 2 will display on the screen. Find Queue job number for job 24.

4. In Foreground type:

SON,2,TN of job in Queue

Shift/Start

Job will display on Typeview Screen.

NOTE: All files in the Typeview Queue gotten with **GQD,2** will always remain waiting. Done will never be displayed.

Installation Procedure 200 Series (Cont)**Keyboard Control of Typeview**

Only the right cursor keybank is used to control Typeview. The following layout indicates which keys should be used.

Start FG	Stop BG	Continue	Softreset
Scroll Right		 Cursor Up	Incr. Zoom Scroll Up
 Cursor Left		Keyboard Select 	Cursor Right 
Scroll Left		Cursor Down 	Decr. Zoom Scroll Down

To go back to CRTronic keyboard press Shift/  key. Press again to go back to Typeview control. A T will display on the right side of the Control Line to indicate the Typeview is on but not in use. The 2/3 or reverse T indicates that the Typeview is in control of the keyboard:

To Turn Typeview Off

1. In Foreground type:

SOFF
Shift/Start

Installation Procedure 200 Series (Cont)**Send Jobs to Typeview in Reverse Video**

1. In Foreground type:

CON,2,1
Shift/Start

2. In Background type:

SETK,2,1,24
Shift/Start

3. In Foreground type:

GQD,2
Shift/Start

Get Job Number from Queue Directory

1. In Foreground type:

SON,2,TN of job from Queue
Shift/Start

Job will display on screen in reverse video.

Installation Procedure 200 Series (Cont)**Output Port Parameters**

There are 14 entries in the output parameters. Each entry is separated by a comma. They are;

1. Port Number (output) 1,2,3 or 4
2. Terminal 1 thru 4
3. Device 0-CRTronic
..... 1- Typeview
4. Operator ID One to eight characters.
First character must be alpha.
5. Priority 1 thru 5
6. Page reduction 1 to 4 (1:1, 1:2, 1:3, 1:4)
7. Typesetting mode 0-Continue - 1 Stop
8. Error handling mode 0- Attended, will stop after each job
1- Will set all except jobs with errors
9. Reverse Video 1- Black screen with white letters
0- White screen with black letters
10. Film Advance Measurement 0- Millimeters
1 inches
11. Left margin Typeview 0 to a maximum of 305
millimeters. (Controls scrolling value)
12. Maximum line measure Typeview 10 to 305 millimeters
13. Monitor Identifier 0-255
14. Memory size 128- 64k Memory

Installation Procedure 200 Series (Cont)

CONCAT Disks

Front I and II can be copied to one disk. This can also be done with Utility I and II and Backend I and II. But it must be remembered that:

1. Only double sided disks can be **CONCAT**.
2. You cannot go double sided to double sided, only single to double.
3. The same type of program must be **CONCAT**. You cannot put Front I and Backend I or Front I of one Rev. and Front II of another Rev.

Also, disks must be initialized with **INIT,S** before they can be **CONCAT** to.

To CONCAT Program Disks.

This command expects a double sided disk in drive 0 and single sided program disk in drive 1.

NOTE: If there is a backend program of the same type already resident on the disk and you wish to replace it with a new backend program **CONCAT** will write over existing program.

Further information to be added when information becomes available.

INSTALLATION TEST PROCEDURE - CRTRONIC 200 - TEST A

MACHINE SERIAL NO. _____ **DATE** _____

7/8 OF POINT - RULE LINE

1 POINT RULE LINE

1 PICA RULE LINE

51 POINT RULE LINE



PERPENDICULARITY AND BOW

LINE MEASURE AT 24 AND 44 PICAS

| | | | | | |



| | | | | | | | | | | | |



START-OF-LINE, END OF-LINE

TEST B

THIS IS 4 POINT
THIS IS 6 POINT
THIS IS 8 POINT TYPE

THIS IS 20 POINT TYPE

THIS IS 30 POINT TYPE

THIS IS 48 POINT TYPE

THIS IS 54 POINT

THIS IS 72 PT

100 POINT

126 PT

TEST C**ELECTRONIC SLANT TEST**

THIS IS 6 POINT
THIS IS 6 POINT TYPE

THIS IS 20 POINT TYPE
THIS IS 30 POINT TYPE
THIS IS 36 POINT TYPE

THIS IS 6 POINT
THIS IS 6 POINT TYPE

THIS IS 20 POINT TYPE
THIS IS 30 POINT TYPE
THIS IS 36 POINT TYPE

THIS IS 6 POINT
THIS IS 6 POINT TYPE

THIS IS 20 POINT TYPE
THIS IS 30 POINT TYPE
THIS IS 36 POINT TYPE

THIS IS 6 POINT
THIS IS 6 POINT TYPE

THIS IS 20 POINT TYPE
THIS IS 30 POINT TYPE
THIS IS 36 POINT TYPE

THIS IS 6 POINT
THIS IS 6 POINT TYPE

THIS IS 20 POINT TYPE
THIS IS 30 POINT TYPE
THIS IS 36 POINT TYPE

TEST D

*ELECTRONICALLY CONDENSED TYPE*ELECTRONICALLY EXPANDED **TYPE****REDUCED** TYPE **SIZE***INCREASED TYPE SIZE*

INDENTS

1. INDENT WORD
INDENT WORD
INDENT WORD
INDENT WORD

NOW IS THE TIME FOR ALL GOOD MEN
 NOW IS THE TIME FOR ALL GOOD MEN
 NOW IS THE TIME FOR ALL GOOD MEN

CHARACTER SPACING NORMAL - **To**MINUS 8 - **To**

BASELINE JUMP - *HHHH* *HHHH* *HHHH*

DISPLAY SUPERIOR

1 1

TEST E

SUPERIORS/INFERIORS

1 2 3 4 5 6 7

Fractions

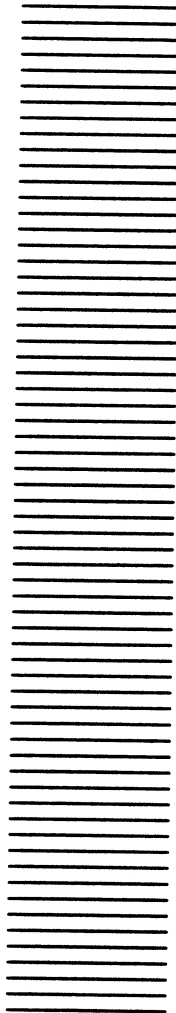
1 $\frac{2}{3}$ 7 $\frac{9}{16}$ 3 $\frac{4}{9}$

Small Caps - B B

111	222	333	444	555	666
111	222	333	444	555	666
222	333	444	555	666	777
222	333	444	555	666	777

TEST F

FILM ADVANCE TEST



Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party.

Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party.

Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party.

Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party.

Now is the time for all good men to come to the aid of the party. Now is the time for all good men to come to the aid of the party.

ACCENTS -Ö Ö Õ Á À Ā

TEST H

Reverse Leading TEST I

Text 1

Text 2

Text 3

Reverse Leading

Replacement Parts List.

Item	MLCo. P/N	Description	Rev.
1.	55-16215-02	CPU Z82 PCB	0
2.	55-16091-02	RAM 320K PCB	0
3.	55-16165-02	VKC-2 PCB	0
4.	55-16055-02	MFC-1 PCB	0
5.	55-16225-02	LVM-SCPU PCB	0
6.	55-16183-02	RAM 512K PCB	0
7.	55-16227-02	LVM BEI PCB	0
8.	55-16195-02	BEA-1 PCB	0
9.	55-16145-02	BEP PCB	0
10.	55-16151-02	BEL PCB	0
11.	55-16155-02	BEV PCB	0
12.	55-16159-02	KLR PCB	0
13.	55-16231-02	LVM-STC	0
14.	55-16137-02	Terminating Plug	0
15.	55-16213-02	8RV Mother Board	0
16.	55-16233-02	9RV Mother Board	0
17.	55-19647-02	Power Supply, NT4	0
18.	55-19532-02	Power Supply, NT5	0
19.	55-19658-02	Power Supply, NT7	0
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